Efficient Electron Gun Mechanism Not Requiring Magnetic Accelerator Useful for Both Lithography and Sabotage

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Introduction

Electron guns are primarily used in laboratory environments in order to produce high-resolution imagery of organic and inorganic specimen.

Electron guns may also be used, in theory, to achieve lithographic tasks. However, the large size of electron guns and the relative inaccuracy of the projected electrons makes this impractical. LASERs are generally used for nano-lithography. However, as photons have substantially less mass than proper electrons, one cannot know for certain how many photons will be required in order to achieve a particular lithographic task. Comparatively large sections of material must be vaporized, creating a limit on the granularity of a lithographic processes based upon the use of LASER light.

If electrons could be directed with equal accuracy as a wave of light, they would behave more like a chisel than a hand grenade and could be used to achieve much more specific goals such as the relocation of a single atom by a small distance rather than the wholesale vaporization of groups of atoms.

At a larger scale, the ability to project electrons as one would project light using a LASER could have a variety of unforeseen applications.

Abstract

Electrons may be projected without the use of a magnetic accelerator mechanism by way of the use of conductive nanosheets in a particular configuration to produce what may be termed electron quartets.

Ordinarily, electrons will not simply "jump" from a conductive wire because their magnetism and the magnetism of the electrons of the conductor are mutually attractive. Electrical arcing can occur when an attractive force (Coulomb-based) generated by a positive terminal exceeds the magnetic force gripping the electrons to the conducting wire.

The use of two-dimensional sheets affords us the opportunity to create a mechanism wherein, even in the absence of an adjacent positive terminal, electrons may be made to part ways with a conductor and be projected into atmosphere or space. The use of a two-dimensional sheet prevents electrons from wrapping around to the other side of the sheet, making it easier for them to leap from the sheet than to remain on the sheet with a combination of angular momentum and mutual attraction to a second electron moving in parallel being

sufficient to provoke electron decoupling of two electrons at a time from either side of the sheets.

Electron quartets may be generated by running current into a pair of U-shaped nanosheets which are curved slightly more than a letter "U," resembling a wine goblet save for the fact that the sheet on the left-hand side would have a left wall which is slightly taller (by three electron widths) and in which the tops of the walls are separated by about five electron widths.

A conductive wire composed of hydrogen is made to penetrate the base of the U-shaped nanosheets to introduce current into the valley formed by the curved sheet. From the penetration point, current runs toward the tops of either side of the sheets toward the point where the two ends of the sheet are made to nearly meet.

As the wall formed is slightly taller on one side, a clockwise rotation is applied to the electron pairs generated and projected by the U-shaped sheet on the left side. The U-shaped sheet on the right-hand side is in the inverse configuration with a wall on the right-hand side which is slightly taller. Each of the 'U's' are pointed inward toward one another so that the two electron pairs generated will converge at a predictable point and their angular momentum would be averaged.

Ordinarily, an electron pair would follow an unpredictable path through atmosphere, but an electron quartet would follow a linear path and could be precisely targeted in nano-lithography applications.

Such nanosheets could be arrayed so that comparatively large number of electrons could be projected. Such a mechanism might be used to cationize large swaths of atmosphere from the ground or from space with the intent being to generate unexpected lightning activity, to interfere with the avionics of aircraft, to corrupt stealth integuments, or, when directed at sensitive electronic equipment such as cellular towers, to permanently destroy the sensitive components of those transmitters/receivers. Increasingly, radio transmitters and receivers are composed of nano-scale antennae which, if atrophied by exposure to free electrons with high energies, could be destroyed in this manner. An X-Ray LASER could achieve similar results but as these systems have size, weight and power requirement attributes which prohibit field use, this electron projection system would enable the devastating effects of an X-Ray LASER to be generate in a way which is practical for field use.

Conclusion

The electron quartet generating electron projector therefore has applications both for nano-lithography and for a variety of forms of electronic sabotage and would prove highly useful if developed.